DETAILED STATEMENT OF WORK

Attached to and made a Part of contract No. DACW57-97-D-0004

Task Order No. DY01

Modification No. 004

Source Water Protection Plan
Perchlorate Study Meetings and Reporting
Lake Belton and Lake Waco, Texas

September 11, 2002

1.0   GENERAL. Task Order No. DY01, is being modified (Modification No. 4) to address
the Data Quality Management/ Verification objectives for the field data collection effort. This
modification adds tasks for including a Project Chemist and replacing the GIS task of data model
integration for GIS animation development. Period of performance shall remain through
September 2003. All sections of this task order shall remain valid except where discussed below.

2.0   SCOPE.

The tasks listed in this section are numbered in accordance with their associated tasks from the
original Statement of Work.

2.15 Task 15. Data Quality Management/ Verification.

2.15.1 Provide Project Chemist. MWH will provide a Project Chemist for this study who will
report to the Project Manager, will interface with the Brazos River Authority (BRA) Laboratory
Project Manager, and will provide direction and support for all study sampling activities,
including sample collection, handling, storage, preservation, and shipment.   Other
responsibilities include:

- Interfacing with the BRA laboratory on matters concerning chemical sampling.
- Interfacing with the USACE laboratory on matters concerning sample analysis, laboratory
  reports, and data verification and validation, and the resolution of nonconforming activities or
  data.
- Reviewing analytical data to ensure conformance with quality assurance testing and
  standards.
- Identifying, reporting, and recommending solutions for nonconforming sampling or analytical
  activities or data.
- Serving as a point of contact for issues related to environmental chemistry.

2.15.2 Data Verification. The Project Chemist will verify the validity of the field and analytical data using the data quality indicators (DQIs), as outlined in the approved Quality Assurance Project Plan (QAPP). The DQIs are quantitative and qualitative statements that describe data quality and will be used to determine whether the DQOs (Data Quality Objectives) of this investigation have been met. For this study, all definitive data will be verified by the Project Chemist based on the principles outlined in the Department of Defense Quality Systems Manual for Environmental Laboratories (Version 1.0, October 2000), and the USACE EM 200-1-3, Appendix I Shell for Analytical Chemistry Requirements (February 2001). Level III data verification will be performed for all sample data, and includes an assessment of all calibration data and QC samples against the acceptance criteria. Level IV data verification will be performed for 10 percent of the sample data, and includes all aspects of a Level III validation plus confirmation (recalculation) of all quantitation calculations. If significant problems are identified during the Level IV data verification, additional data will be verified using Level IV procedures until data problems are resolved.

2.15.3 Data Validation – Reconciliation with Data Quality Objectives. The Project Chemist will also perform data validation as part of their project duties. The objective of the data validation is to assess whether the field and chemical data are of sufficient quality to support the task-specific DQOs (i.e. end use). Field data will be qualitatively and quantitatively assessed on a project-wide, task-specific, matrix-specific, parameter-specific, and unit-specific basis. Factors that will be considered during this evaluation will include, but not be limited to the following:

- Were all samples collecting using the methodologies included in the QAPP and the task-specific FSPs?
- Were all proposed analysis performed in accordance with the QAPP and the laboratory's SOPs?
- Were the PQLs elevated and what impact if any to data usability occurred?
- Were samples obtained from all proposed sampling locations and depths?
- Do any data exhibit elevated detection limits due to matrix interference or contaminants present at high concentrations?
- Were all field and laboratory data verified in accordance with the verification protocols, including the project-specific QC objectives specified in this QAPP?
- Which data sets were found to be unusable ("R" qualified) based on the data verification results?
- Which data sets were found to be usable for limited purposes ("J" qualified) based on the data verification?
- What affect do qualified data have on the ability to implement the project decision rules?
- Can valid conclusions be drawn for all matrices for each specific task?
- Were all issues requiring corrective action fully resolved?

2.15.4 Field Audit. The Project Chemist will visit the field during the initial sampling events to perform a field audit to observe the field activities to check if the above objectives are met.

2.15.5 Laboratory Review. An internal review of the laboratory will be performed by the Project Chemist, at the discretion of USACE Project Manager, within six months of study start up and will include a review of the following items:

- Sample custody procedures
- Calibration procedures and documentation
- Completeness of data forms, notebooks, and other reporting requirements
- Data review and verification procedures
- Data storage, filing, and record keeping procedures
- QC procedures, tolerances, and documentation
- Operating conditions of facilities and equipment
- Documentation of training and maintenance activities
- Systems and operations overview
- Security of laboratory automated systems.

MWH will forward audit results to appropriate management and the USACE Project Manager. Deficiencies and corrective action procedures will be clearly documented in the audit report. As part of the laboratory audit, some performance audit samples would be fed into the normal field sample stream. If these were not available through commercial sources, the USACE laboratory in Vicksburg would provide them.

2.6.5 Task 5. GIS Applications/ Animation Development - This task will be performed in the place of '2.6.5 Task 5 – Data Model Integration' of Modification No. 001 of contract no. DACW57-97-D-0004 dated October 3, 2001. Based on discussions in the project meeting on August 23, 2002, the project team decided that modeling for this project will not be performed. Instead of modeling, GIS applications will be developed to import, store, analyze and animate collected data. The following GIS applications will be developed for this project. These applications were finalized in the project meeting on August 23, 2002. The sampling data importer tools will be developed only for sample parameters where significant amounts of data will be collected.

- Document Selector
- Data Form Manager
- Theme Manager
- Sampling Data Importer (Shell)
- Sampling Data Importer (ISCO Flow Data)
- Sampling Data Importer (ISCO Rain Data)
- Sampling Data Importer (Groundwater Data)
- Sampling Data Importer (Lab Sample Results)
- Sampling Data Importer (Dye Results)
- Sampling Data Importer (Other Parameters)
- Sampling Data Importer (Algae)
- Sampling Data Importer (Texas Tech data)

- Data Clean Up
- Graph Manager
- Plume Maps
- Create Plots
- Simple ArcIMS Tools/ Development